DOCUMENT RESUME

ED 370 519 HE 027 480

AUTHOR Paszczyk, Sandra L.
TITLE A Comparative Analysis of ACT Scores and Final GPAs of Chicago State University Undergraduate Students.
PUB DATE Apr 94
NOTE 15p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Achievement; Correlation; *Grade Point Average; Higher Education; *Prediction; Predictive Measurement; Standardized Tests; *Undergraduate Students
IDENTIFIERS *ACT Assessment; Chicago State University IL

ABSTRACT

This study examined whether American College Testing (ACT) scores are a reliable predictor of college success using data on Chicago State University (CSU) graduates. The study used data on all undergraduates who had successfully completed a degree program and graduated in one of nine successive terms between Fall 1990 and Fall 1993 and also had an ACT record. In total, 1,752 students graduated from CSU during this period. Of these the 428 who had an ACT score on their records comprised the study population. ACT and grade point averages (GPA) were obtained from the CSU computerized database. The Pearson-Product-Moment Correlation was employed by determining the correlation between the sample's ACT scores and GPAs. Interestingly, students who graduated in Fall 1992 had the highest average ACT score but the lowest final grade point average. Results indicated a correlation between the ACT and the final GPA of students: the 16-20 and 21-25 ACT ranges were significant predictors of GPA at the .05 level of significance and as the ACT score increased, so did the final GPA. (Contains 13 references.) (JB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 370 519

A COMPARATIVE ANALYSIS OF ACT SCORES AND FINAL GPAs OF CHICAGO STATE UNIVERSITY UNDERGRADUATE STUDENTS

by

Sandra Paszczyk

April 1994

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Sandra L. Paszczyk

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

HE 027 482

BEST COPY AVAILABLE

The ACT Assessment, the American College Test, is one of the most commonly used college admission tests in the United States. It is a three-hour test which consists of four parts: English, mathematics, reading and science reasoning. ACT is organized by American College Testing which is a non-profit organization in Iowa City, Iowa. It measures students' current level of achievement and their ability to perform college level work. In addition to the ACT, students' high school gpa's and class ranks are taken into consideration for admission into a particular college.

Many studies of academic prediction have utilized the American College Test (ACT) scores or the Scholastic Aptitude Test (SAT) scores. The two tests are similar in nature but produced by competing companies.

The original version of the ACT Assessment was converted to the Enhanced ACT Assessment in October 1989. ACT composite scores ranged from 1 to 35 on the original test and range from 3 to 36 on the Enhanced ACT. Exhibit 1 is a presentation of the conversion table with equivalent SAT scores.

Because competition for admission to the more prestigious colleges and universities is so great, only those students with the highest ACT/SAT scores, high school GPA's and class rankings, are admitted. Many of the students who are not accepted into these colleges attend another college with less stringent

requirements with the hope of being accepted at a later date. Acceptance of transfer students is mainly based on previous college academic performance.

The problems with selecting students are many and varied. If 50 people apply for a program that has only 30 openings, which of these 50 people should be admitted to the program? Should the first 30 people who apply be accepted? If not the first 30 who apply, what criteria should be used? John Lloyd (Sept. 1983) in his article "The Admission Question - Who Gets In and Who Doesn't?" declares the need for apparent validated norms in tests used for admissions purposes in vocational schools.

Wonderlic's (1990) research provides a method for determining minimum scores by type of vocational program based on the use of the Wonderlic Scholastic Level Exam (SLE). Swaney and Predizer (1988) researched the correlation between ability tests such as the Career Planning Program (CPP) and vocational course grades and concurred with Pucel (1980) that satisfaction and success in vocational programs are generally in agreement with expectations based on the content of their vocational program.

The prediction of college grade point averages (GPA) has been a topic of strong interest for many years. ACT research consistently indicates that students who prepare academically by taking a core high school program score higher on the ACT Assessment than students who do not take a core high school program. This association generally holds true across ability

levels, ethnic groups, and family income levels (National, 1991). Information such as this lends support to the need for college-preparatory core curriculums that prove to have a positive effect on ACT results.

Christopher Shea stated in the September 22, 1993 issue of Chronicle of Higher Education that the average 1993 ACT score for graduating high school seniors was 20.7, an increase of 0.1 over 1992. Males scored an average of 21.0 while females scored an average of 20.5.

Crawford's (1990) research on postdiction of college GPA scores from ACT composite scores and high school GPA's did a comparison based on gender and race. His study of 1,121 freshmen and sophomore students from a West Virginia college demonstrated significant differences in postdictions for race and gender with substantially greater frequencies of over/under postdictions when the ACT composite score was the only predictor variable.

In Siebert's (1989) study of the relationship between ACT, PPST, NTE, ACT/COMP, and GPA, he found that there was a high correlation between the NTE General Knowledge Test and the ACT composite score. Fletcher (1989) conducted a similar research project to determine if the requirement of the PPST was necessary in terms of money and redundance in relation to scores on the ACT. He found that the single best predictor for all groups was the ACT Composite and concluded that this overlap of testing in

many teacher education programs in unnecessary. Adcock's (1992) research on University of Tennessee freshman and sophomore students' cumulative grade point averages, based his outcomes on six criteria. He used ACT composite scores, high school grade point averages, whether or not the students' high schools were accredited by the Southern Association of Colleges and Schools (SACS), the number of students on free or reduced lunches, the school system's adjusted expenditure per pupil, and whether the students received collegiate financial aid. Adcock found that for the given data set, high school grade point averages and ACT composite scores provided a relevant prediction of college grade point averages. However, he did find that the predictability contribution of the high school grade point averages was far superior to the ACT composite scores or to any other combination of variables.

Since high school grades are actually a combined measure of not only academic achievement skills and knowledge but also a subjective opinion of the student's effort and participation in class, these grades may not accurately represent academic achievement. The extent to which this achievement is distorted by factors outside academic achievement poses a question of reliability and validity to grades and the prediction of future level of success in college. Even though the lack of distortion-free grades directly impacts prediction accuracy, Baird (1969)

stated "The best predictor of college achievement is similar achievement in high school" (p. 425).

Although the ACT Assessment test may not measure all of the knowledge and skills required for performance success in college, it is more than probable that it measures a majority of the most important or necessary skills and knowledge required in college courses. An important concern when considering the ACT score and prediction of college success is the break-off point on the ACT scale that the college chooses to use in its admission requirements. Barney (1985), who studied business students and the relationship between social class, ACT/SAT scores and achievement through the second year of college, concluded that ACT scores were not significantly related to achievement. Hudson (1989) determined that ACT scores corresponded very well to scores on other placement tests, but that neither ACT scores nor the scores from other tests correlated to any appreciable extent with performance.

The purpose of the current study was to determine if ACT scores are a reliable predictor of college success. Another thought-provoking question is whether they should be used in addition to the high school GPA and class rank when determining whether or not a student should be admitted to a college.

To summarize the results obtained in the previous studies researched relating to this topic, it is safe to state that there

is a correlation between the ACT Composite score and the final college grade point average. Therefore, there is a need to determine the correlation between students' ACT scores and their GPA in college.

Procedures:

The population for this study included all Chicago State University (CSU) undergraduates who have successfully completed a degree program for the following terms: Fall 1990, Spring 1991, Summer 1991, Fall 1991, Spring 1992, Summer 1992, Fall 1992, Spring 1993 and Fall 1993 and have an ACT on record. In total, 1,752 students graduated from CSU during this period but only 428 of these students had an ACT score on their records. A sample of 428 graduates who had an ACT score on record constituted this study.

Student ACT and GPA scores were obtained from the CSU computerized database. The Pearson-Product-Moment Correlation was employed to determine the correlation between the sample's ACT and GPA scores.

Findings of the Study

At the end of each academic term student's grades are entered into the computer data base system. These grades are automatically computed to achieve a current grade point average. The 428 students who graduated between Fall 1990 and Fall 1993 and whose records included an ACT score constituted the sample for this study. The 428 students represent approximately 25% of the students who graduated during these terms.

Exhibit 2 illustrates the GPA/ACT high/low/average scores by semester, Fall 1990 through Fall 1993. Students who graduated in Fall 1992 had the highest average ACT score (17.89) although that same period produced the lowest final grade point average (2.57).

Exhibit 3 is a pie chart which displays the student sample size by ACT score. The majority of the students (260 or 60%) scored in the 16-20 ACT range while 116 students (27%) scored in the 11-15 range

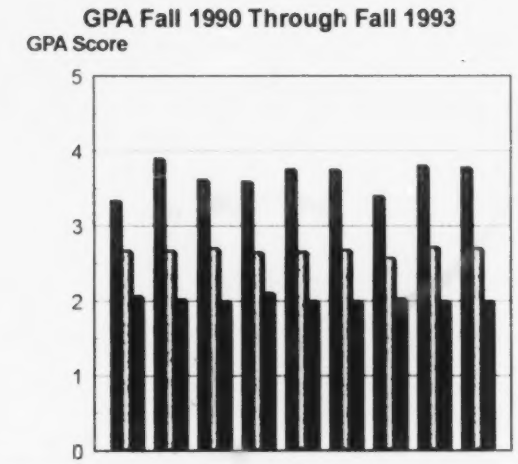
Table 1 classifies students by their ACT Composite scores. For each group within a given ACT range the mean ACT score, mean GPA score, and the standard deviations were calculated. The Pearson-Product-Moment Correlation (Pearson r) for the pairs of variables was used to compute a correlation coefficient. Table 1 summarizes the results of this analysis.

CONVERSION TABLE

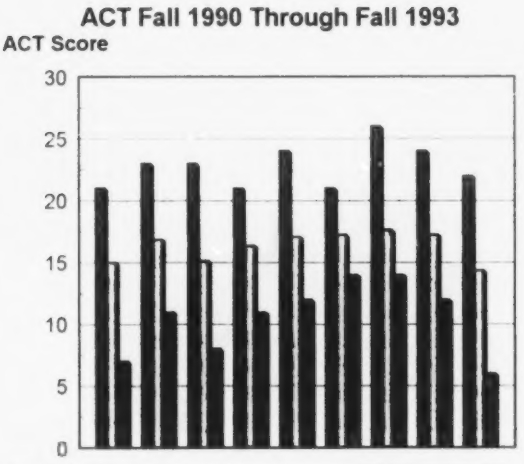
ACT COMPOSITE SCORE	ENHANCED ACT COMPOSITE SCORE	EQUIVALENT SAT TOTAL SCORE
35	36	—
34	35	1500-1540
33	34	1440-1490
32	33	1390-1430
31	32	1330-1380
30	31	1260-1320
29	30	1200-1250
28	29	1150-1190
27	28	1100-1140
26	27	1050-1090
25	26	1010-1040
24	25	970-1000
23	24	930-960
22	23	900-920
21	22	870-890
20	21	840-860
19	21	800-830
18	20	770-790
17	19	740-760
16	19	720-730
15	18	690-710
14	17	660-680
13	17	640-650
12	16	610-630
11	15	590-600
10	14	560-580
9	14	530-550
8	13	500-520
7	12	470-490
6	11	—
5	11	—
4	9	—
3	7	—
2	5	—
1	3	—

EXHIBIT 2

GPA/ACT HIGH/LOW/AVERAGE SCORES



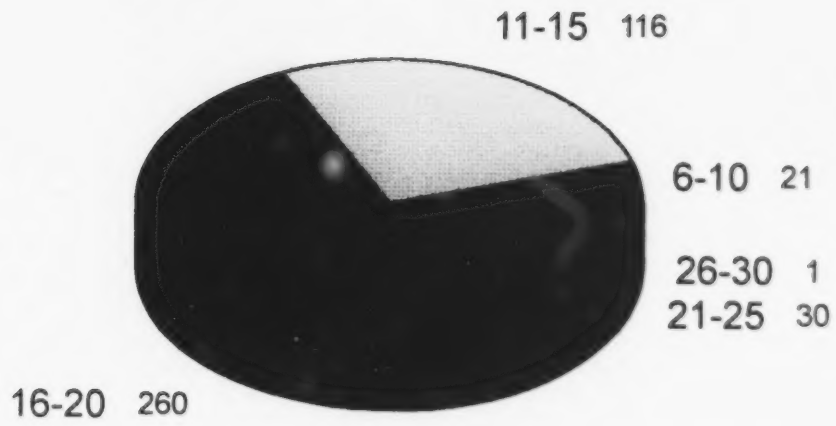
Semester	1	2	3	4	5	6	7	8	9
High	3.34	3.90	3.62	3.60	3.76	3.75	3.40	3.80	3.78
Average	2.67	2.67	2.70	2.65	2.66	2.68	2.57	2.72	2.70
Low	2.07	2.02	2.00	2.11	2.00	2.00	2.03	2.00	2.00



Semester	1	2	3	4	5	6	7	8	9
High	21.00	23.00	23.00	21.00	24.00	21.00	26.00	24.00	22.00
Average	15.00	16.86	15.12	16.41	17.09	17.26	17.63	17.29	14.35
Low	7.00	11.00	8.00	11.00	12.00	14.00	14.00	12.00	6.00

EXHIBIT 3

STUDENT SAMPLE SIZE BY ACT



Number of
Students

TABLE 1

ACT Composite score range, sample size, mean ACT, mean GPA, Standard Deviation, Pearson r, and correlation value for the ACT Composite scores and final grade point average

ACT RANGE	SAMPLE SIZE	MEAN ACT	MEAN GPA	STANDARD DEVIATION	PEARSON R	CORRELATION COEFFICIENT
6-10	21	9	2.48	1.195229	0.055581	.432977
11-15	116	14	2.61	1.255900	0.162600	.1946
16-20	260	18	2.67	1.143900	0.229300	.1946*
21-25	30	22	3.02	0.982600	0.371900	.3494*
26-30	1	26	2.40	0.000000	0.000000	.99692

*significant at the .05 level of significance

There appears to be a correlation between the ACT and the final GPA of Chicago State University students. The 16-20 and 21-25 ACT ranges were significant at the .05 level of significance and, as the ACT range increased, so did the final GPA.

References

ACT Assessment Results: Summary Report, National 1991

Adcock, Ken Rayburn, Ph.D. (1992) "Predicting student cumulative grade point averages for the University of Tennessee for graduates of Tennessee public high schools", a dissertation written in completion of a degree from the University of Tennessee with Professor C. Glennon Rowell as advisor. An abstract in Dissertation Abstracts International, v. 53, no. 7, January 1993.

Bontekoe, Jon F. (1992) "The ACT as a Predictor of College Success at Trinity Christian College", (ERIC Document Reproduction No. ED 355 258).

Crawford, Paul L.; And Others. (1990) "Postdictions of College GPAs from ACT Composite Scores and High School GPAs: Comparisons by Race and Gender.

Fletcher, Richard K. Jr.; And Others. "Relationships between the PPST and ACT Admissions Tests for Teacher Education and College GPA and NTE", a paper presented at the Annual Meeting of the Mid-South Educational Research Association (Little Rock, AR, November 8-10, 1989).

Franklin, Bobby J, Linda J. Crone (Nov 1992) "School Accountability: Predictors and Indicators of Louisiana School Effectiveness", a paper presented at the Annual Meeting of the Mid-South Educational Association (21st, Knoxville, TN, November 11-13, 1992).

Hendel, Darwin D. (1991) "Evidence of Convergent and Discriminant Validity in Three Measures of College Outcomes", Education and Psychological Measurement, v 51, Summer, 1991: 351-358.

Noble, Julie P., "Predicting College Grades from ACT Assessment Scores and High School Course Work and Grade Information", (ERIC Document Reproduction No. ED 344 943).

Phillippi, Raymond H. (1992) "Just What Does the ACT Assessment and the ACT/COMP Measure Anyway?", a paper presented at the Annual Forum of the Association for Institutional Research (32nd, Atlanta, GA, May 10-13, 1992).

Pucel, D. (1980) Review and Synthesis of Criteria Useful for the Selection of Admissions of Vocational Students, Columbus, OH, National Center for Research in Vocational Education.

Shea, Christopher. "Assessment College-Admission", il v40 The Chronicle of Higher Education, September 22, 1993, p. 34.

Siebert, Paula C. "Relationships among the ACT, PPST, NTE, ACT COMP, and the GPA", a paper presented in part at the Annual Meeting of the Eastern Educational Research Association (Savannah, GA, February 1989).

Swaney, K. B., and Prediger, D. J. (1988) "Relationship Between Career Planning Program Ability Tests and Course Grades", Supplement I, Interim Psychometric Handbook for the ACT Career Planning Program, (pp. 1-29), Iowa City, IA.